FACT SHEET FOR NPDES PERMIT NO. WA0024546
LEWIS COUNTY WATER DISTRICT NO. 2
(ONALASKA)

TABLE OF CONTENTS

Page

TABLE OF CONTENTS (cont.)

Page

INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the state of Washington on the basis of Chapter 90.48 RCW which defines the Department of Ecology's (Department) authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the state include procedures for issuing permits (Chapter 173-220 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix F--Response to Comments.

GENERAL INFORMATION

Applicant:	Lewis County Sewer District No. 2 (Onalaska) P.O. Box 146 Onalaska, Washington 98570-0146
Facility Name and Address:	Onalaska Wastewater Treatment Plant 1678 State Highway 508 Onalaska, Washington 98570
Type of Treatment:	Extended Aeration Activated Sludge (Oxidation Ditch)
Discharge Location:	South Fork of the Newaukum River (RM 20.1)
	Latitude: 46° 34' 14" N. Longitude: 122° 43' 38" W.
Water Body ID Number:	WA-23-1090 (CPAN# 10-23-14)

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

HISTORY

The original water and wastewater systems serving the Town of Onalaska were developed and operated by the Carlisle Lumber Company in the early 1920s. The original collection system consisted of clay pipe with rainwater flush tanks, which conveyed the raw sewage into two large septic tanks with drain fields. After the lumber company closed, the systems were operated as a community effort until the formation of the Lewis County Water District (LCWD#2) on September 16, 1970. In 1975, the water district constructed a new collection and treatment system to replace the old septic tank system.

The Onalaska Wastewater Treatment Plant consists of an oxidation ditch, secondary clarifier, and sludge holding with chlorine disinfection prior to discharge to the Newaukum River. The treatment and collection system was placed into operation in 1978. Treatment is provided for a 20-year population of 150 residents and 693 students in 1975 to 589 residents and 868 students in 1995. The existing estimate population is 335 residents and 1091 students.

Average monthly flow for this facility has been 0.034 mgd, with peak flows as high as 0.163 mgd. Infiltration and inflow are the cause of peak flows, which exceed the 0.080 mgd design flow; however, little appears to be known of the locations of this I/I. During the last three years (June 1995 through May 1998), this plant has not been consistently in compliance. Exceedances in pH values below the permit limit of 6.0, BOD5, and TSS (monthly and weekly averages). The facility has generally met the 85 percent removal criteria for BOD5 and TSS. The concentration limits have not been consistently below 30 mg/L. However, the DMR data prior to August 1997 is suspect and cannot be reliably used (see Appendix E -- WWTP Inspection Reports).

COLLECTION SYSTEM STATUS

The collection system consists of three basins:

Basin 1. Central and southwestern commercial and residential district. Wastewater flows are conveyed to the WWTP by gravity.

Basin 2. Northerly residential district, which includes the Onalaska School. Wastewater flows to a pump station that discharges into the upstream end of Basin 1.

Basin 3. Southeasterly commercial and residential district. Wastewater flows to a pump station that releases flows into Basin 1.

The existing wastewater plant and most of the original mains installed by the lumber company, which serve the central and western portions of the town, are contained within Basin 1. The sewer system consists of approximately 15,930 feet of vitrified clay, PVC and asbestos cement pipe (4” to 8” diameter). Two wet well pump stations with submersible pumps serve the extreme northerly and easterly portions of the system.

Limited access to the sewer system in portions of the water district service area coupled with a lack of excess wastewater treatment capacity has caused a number of water customers to utilize private septic systems. There are currently 173 water customers as compared to 149 sewer customers. The water district has a sewer ordinance in place which requires that any structure located within 250 feet of an existing sewer main be connected to that main. Due to the condition of the existing system, this ordinance has not been strictly enforced. Once additional wastewater treatment capacity has been added

and collection mains have been replaced and extended, enforcement of the water district sewer ordinance will eliminate the use of private septic systems within the service area.

TREATMENT PROCESSES

Existing Treatment Plant

The existing treatment plant consists of a manually cleaned bar screen followed by a single rotor, extended aeration activated sludge (oxidation ditch), secondary clarifier, and chlorine contact basin. The facility utilizes airlift pumps for recirculation and wasting purposes. The plant flow is measured with a 90 degree V-notch weir located at the outfall end of the chlorine contact basin. The sludge is first stored in an aerated holding tank then transferred to a truck for hauling to the Biorecycling facility near the City of Chehalis. The plant has an emergency power generator on site that was disconnected and moved outside next to the lab building. An Administrative Order was issued that included a requirement to reconnect the generator to provide power in case of an outage. The plant's covered sludge drying beds are not functional. Cracks have developed in the structures and the under drains are plugged. This plant is classified as a Class II plant and required a Group II certified operator for its day-to-day operations.

Proposed Treatment Plant

The Comprehensive Sewer Plan was approved in December 1997 and the Facility Plan for the new wastewater treatment plant was approved in March 1998. The proposed wastewater treatment plant consists of: influent structure with manual screen and Parshall flume, influent pump station, Sequencing Batch Reactor (SBR) activated sludge treatment system (aeration basins and equipment), ultra-violet (UV) disinfection (see following item on UV Disinfection), effluent flow measurement, sludge digester (blowers), conversion of existing clarifier to sludge thickener with transfer pumps and holding tank, conversion of existing building to laboratory, new building for blowers, electrical equipment, shop, standby generator, and new access roadway.

ULTRAVIOLET DISINFECTION SYSTEM

The approved Facility Plan selected UV as the disinfection alternative for the proposed new facility. UV is a physical process that uses electromagnetic energy to disrupt the reproductive function of microbial cells. UV disinfection systems consist of UV lamps within a reactor, electronic ballast, power distribution centers, system controls, and a lamp cleaning rack.

UV light at a wavelength of 253.7 nanometers (nm) has the optimum germicidal effect. For wastewater disinfection, mercury vapor lamps are used to provide the desired wavelength. These lamps are inserted into quartz sleeves and then placed into wastewater. The quartz sleeves prevent scale from building up on the lamps and also prevent the lamps from being cooled by the wastewater (UV lamps are less efficient at lower temperatures).

UV dosage is measured in units of milliwatt-seconds per square centimeter ($\mu W\text{-}sec/cm^2$) and is a function of light intensity ($\mu W/cm^2$) multiplied by the time (seconds) the organism is exposed. UV detectors mounted near the lamps measure the average UV intensity. **UV Dosage is monitored to determine when UV unit needs maintenance to assure adequate disinfection**. Lamps or banks of lamps can be turned on and off to maintain a target UV dosage at varying flow rates.

The parameters that affect dosage received by the pathogens and, therefore, disinfection performance are:

- UV intensity
- Exposure time (flow rate and hydraulic conditions)

- UV transmittance through the wastewater
- Wastewater suspended solids.

UV systems designed to meet 200 fecal coliforms/100 mL will normally produce fecal coliform counts in the range of 5 to 20/100 mL. An option for scheduled lamp cleaning can be based on fecal counts (i.e., when counts approach 100/100 mL, the lamps are cleaned).

The UV control and monitoring system includes the provisions for the following parameters:

- Individual lamp status and alarm
- GFI status for each UV rack with trip alarm
- UV Intensity
- UV intensity low warning.

In the event of failure or interruption of operation of the UV control and monitoring system each power distribution center shall operate and provide the designed disinfection performance. The UV control and monitoring system is provided with a display screen and message center that allows complete operator interface. Operator interface is menu driven with automatic fault message windows appearing upon alarm conditions. During times that the facility is not staffed (i.e., evenings and weekends), all alarms are telemetered to the on-duty treatment plant staff person.

DISCHARGE OUTFALL

Secondary treated and disinfected effluent is discharged from the facility via an eight-inch pipe into the South Fork of the Newaukum River.

At the time of the last two Class 1 inspections (January 12, 1994, and June 14, 1995), a large gravel sand bar had formed at the location of the outfall. The main river channel is on the opposite side of the bar from the discharge. The diffuser pipe was suspended above the overflow channel, which was flowing at the time of the inspection. However, during low flow conditions, the overflow channel will be dry and the discharge will have to percolate through the gravel bar to reach the flowing river.

In September 1996, the outfall was extended to the existing river channel to provide additional dilution and to meet permit requirements. The existing diffuser spans an estimated 60 percent across the river at low flows. The river is approximately 40 feet wide at low flows. The diffuser ports are spaced at approximately 12-inch centers along the length of the diffuser. Permit Special Condition S8 requires the submittal of a report that documents the outfall and diffuser (ports) and receiving water profile at critical conditions.

RESIDUAL SOLIDS

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and screenings are drained and disposed of as solid waste at the local landfill. The recommended plan was to remove solids from the SBR to the aerobic digester for further treatment and land apply under a permit from the Lewis County Health District. However, the facility sludge wasting was neglected for a number of years (see "Summary Of Compliance With Previous Permit") and the District did not have a land disposal site available. The present sludge disposal method is to have a septic tank pumper pump the aerobic digester out once every two months and dispose of properly.

RESIDUAL SOLIDS MANAGEMENT PLAN

The Permittee shall submit a Residual Solids Management Plan to the Department for approval no later than 90 days prior to completion of construction of the new wastewater treatment facility. Any proposed revision or modification of the Plan shall be submitted to the Department for approval. The Permittee shall comply with the plan and any modifications thereof. The Permittee shall submit an update of the Residual Solids Management Plan (see Special Condition S7.B) with the application for permit renewal 180 days prior to the expiration date of this permit.

PERMIT STATUS

The previous permit for this facility was issued on April 28, 1986. The previous permit placed effluent limitations on 5-day Biochemical Oxygen Demand (BOD_5), Total Suspended Solids (TSS), pH, and Fecal Coliform Bacteria.

An application for permit renewal was submitted to the Department on March 19, 1998, and accepted by the Department on April 30, 1998.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility received its last inspection on September 12, 1996. This was an announced compliance inspection that was conducted on a follow-up to a previous issuance of a Notice of Correction (May 30, 1996). A follow-up unannounced enforcement and compliance inspection with sampling was conducted on June 5, 1997, due to a complaint received about facility odors.

Based on Discharge Monitoring Reports (DMRs) submitted to the Department and inspections conducted by the Department, the Permittee has not remained in compliance with the permit effluent limitations. See Appendix E for summary of Inspection Reports.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the NPDES application and in discharge monitoring reports. The effluent is characterized as follows:

Table 1: Wastewater Characterization

Parameter	Concentration
Flow, average annual	.030 MGD
pH	6.5 to 7.2
Fecal Coliform	66 /100 ml
BOD (5 Day), max month	12 mg/l
Chlorine Residual	.069 mg/l (maximum)
Total Suspended Solids	166 mg/l (max month)

PROPOSED PERMIT LIMITATIONS

Federal and state regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the state of Washington were determined and included in this permit. The Department does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department.

DESIGN CRITERIA

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for the existing and proposed treatment facility are taken from the existing Fact Sheet and Comprehensive sewer Plan/Facility Plan (March 1998) prepared by Jerome W. Morrissette & Associates and H. R. Esvelt Engineering and are as follows:

Table 2: Design Standards

Parameter	Existing Design	Proposed Design
Monthly average flow (max. month)	0.080 MGD	0.20 MGD
Monthly average dry weather flow	n/a	0.088 MGD
Monthly average wet weather flow	n/a	0.126 MGD
Instantaneous peak flow	n/a	350 GPM
BOD_5 influent loading	133 lbs/day	350 lbs/day
TSS influent loading	133 lbs/day	350 lbs/day
Ammonia (as N)	n/a	40 lbs/day

COMPLIANCE SCHEDULE

The Lewis County Water District No. 2 Commissioners did not accept the state's Grant and Loan offer in the FY99 Funding Cycle. This funding was offered so the District could proceed with the design and construction of the treatment and collection system. The commissioners were also offered the design loan separately with the opportunity to apply for Grant funding in FY2000 to construct the facilities. Therefore, the Department has determined that an Administrative Order with a compliance schedule will be required to ensure final compliance with the water quality-based effluent limits in the shortest, reasonable period of time, to achieve the specified requirements. Meeting the final effluent limits will require the Permittee to design and construct necessary treatment capability. Therefore, the Department has included the following schedule for compliance with the final effluent limitations:

Plans and Specifications

Draft Plans and Specifications. ..... November 30, 1999
Approval of Plans and Specifications ..... February 28, 2000

Construction

Start Construction ..... November 30, 2000
Completion of Construction ..... December 31, 2001
Compliance with Final Effluent Limits ..... December 31, 2002

INTERIM EFFLUENT LIMITATIONS

Since the District is not proceeding with the completion of the design and construction of the new facilities, it is imperative that the Department establish the above compliance schedule and develop the following interim effluent limitations. Because the period of time for compliance, specified above, exceeds one year, the permit shall set forth interim requirements. These interim limits are based on the performance of the existing facility as demonstrated by the data submitted in the Discharge Monitoring Reports (DMRs). The DMRs are suspect prior to May 1996 because of inconsistencies in reporting effluent parameters. For example, the period from May 1992 through September 1993, there were no DMRs submitted. In accordance with WAC 173-220-140, "The department shall establish schedules and permit conditions (as follows) to achieve compliance with applicable effluent standards and limitations and other legal applicable requirements:"

Parameter	**Average Monthly**	**Average Weekly**
Biochemical Oxygen Demand (5 day)	30.0 mg/L, 25.0 lbs/day 85 % Removal	45.0 mg/L, 37.5 lbs/day
Total Suspended Solids	48 mg/L, 40.0 lbs/day 85 % Removal	80 mg/L, 66.7 lbs/day
Fecal Coliform Bacteria	200 /100 mL	400 /100 mL
pH	Daily minimum is equal to or greater than 6 and the daily maximum is less than or equal to 9.	
Total Residual Chlorine[a]	0.50 mg/L	0.75 mg/l

[a]The Permittee is required by Administrative Order No. DE 98WQ-S265 to install dechlorination at the WWTP by May 1, 1999. Total Residual Chlorine limit shall meet technology based limits of 0.50 mg/L, average monthly, and 0.75 mg/L, maximum daily, until decholorination is installed.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

The following technology-based limits for pH, fecal coliform, BOD_5, and TSS are taken from Chapter 173-221 WAC are:

Table 3: Technology-based Limits.

Parameter	Limit
pH	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
BOD_5 (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
Chlorine	Average Monthly Limit = 0.5 mg/L Average Weekly Limit = 0.75 mg/L

The technology-based monthly average limitation for chlorine is derived from standard operating practices. The Water Pollution Control Federation's Chlorination of Wastewater (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/liter chlorine residual is maintained after fifteen minutes of contact time. See also Metcalf and Eddy, Wastewater Engineering Treatment, Disposal and Reuse, Third Edition, 1991. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/liter chlorine limit on a monthly average basis. According to WAC 173-221-030(11)(b), the corresponding weekly average is 0.75 mg/liter.

The following technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

Monthly effluent mass loadings (lbs/day) were calculated as the maximum monthly design flow (0.20 MGD) x Concentration limit (30 mg/L) x 8.34 (conversion factor) = mass limit 50.0 lbs./day.

The weekly average effluent mass loading is calculated as maximum monthly design flow (0.20 MGD) x Concentration limit (40 mg/L) x 8.34 (conversion factor) = mass limit 66.7 lbs./day.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the state of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

ANTIDEGRADATION

The state of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of receiving water are of higher quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. More information on the state Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

MIXING ZONES

The Water Quality Standards allow the Department to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

DESCRIPTION OF THE RECEIVING WATER

The facility discharges to the South Fork of the Newaukum River that is designated as a Class A receiving water in the vicinity of the outfall. Characteristic uses include the following:

> water supply (domestic, industrial, agricultural); stock watering; fish migration; fish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

Water quality of this class shall meet or exceed the requirements for all or substantially all uses.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Fecal Coliforms	100 organisms/100 mL maximum geometric mean
Dissolved Oxygen	8 mg/L minimum
Temperature	18 degrees Celsius maximum or incremental increases above background
pH	6.5 to 8.5 standard units
Turbidity	less than 5 NTUs above background
Toxics	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls which the Department has determined to be AKART. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and are defined as follows:

The dilution factors of effluent to receiving water that occur within these zones have been determined at the critical condition by the use of WAC 173-201A-100(70(a)(ii) and (8)(a)(ii). The dilution factors for Aquatic Life have been determined to be (from Appendix C): Acute = 1.70; Chronic = 23.4.

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The critical condition for the South Fork of the Newaukum River is the seven day average low river flow with a recurrence interval of ten years (7Q10). Ambient data at critical conditions in the vicinity of the outfall was taken from the TMDL study which considered both historical data and an intensive

monitoring study conducted in May through October 1991- 1992. The ambient background data used for this permit includes the following from (Upper Chehalis River TMDL – Newaukum River Tributary):

Parameter	Value used
7Q10 low flow	20.6 cfs
Velocity	1.03 ft/sec
Depth	0.50 feet
Width	40.0 feet
Roughness (Manning)	n=0.068
Slope	4.7 E-03 (0.27 degrees)
Temperature	19.1o C
pH (high)	7.7
Dissolved Oxygen	8.5 mg/L
Total Ammonia-N	0.039 mg/L
Fecal Coliform	68/100 mL dry weather (>100/100 mL storm related)
Conductivity	86 µho/cm
Turbidity	1.4 NTU
Hardness	35.4 mg/L as CaCO3

BOD_5--Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters when meeting the technology-based limits. Therefore, the technology-based effluent limitation for BOD_5 was placed in the permit.

The impact of BOD on the receiving water was modeled using Streeter Phelps, at critical condition and with the technology-based effluent limitation for BOD_5 described under "Technology-Based Effluent Limitations" above. The calculations used to determine dissolved oxygen impacts are shown in Appendix C.

Temperature and pH--The impact of pH and temperature were modeled using the calculations from EPA, 1988. The input variables were dilution factor 23.4, upstream temperature 19.1^{o}C, upstream pH 7.7, upstream alkalinity 35.4 (as mg $CaCO_3$/L), effluent temperature 20.0 ^{o}C, effluent pH of 6, effluent pH of 9, and effluent alkalinity 100 (as mg $CaCO_3$/L).

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, the technology-based effluent limitations for pH was placed in the permit and temperature was not limited.

Fecal coliform--The numbers of fecal coliform were modeled by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a dilution factor of 23.4.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters with the technology-based limit. Therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in the proposed permit.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

The toxics pollutant, ammonia was determined to be present in the discharge. Because this is a new facility, a reasonable potential analysis was not conducted on this parameter to determine whether or not effluent limitations would be required in this permit. At least two years of data shall be collected before a reasonable potential can be calculated.

The calculation of the water quality limits required for ammonia to exceed the criteria was evaluated (Appendix C) at the critical condition. The critical condition in this case occurs May 1 through October 31. The parameters used in the critical condition modeling are as follows: acute dilution factor 1.7, chronic dilution factor 23.4. Valid ambient background data was available for ammonia in the receiving water: temperature = 19.1 ^{o}C, and receiving water alkalinity = 35.4 (as mg $CaCO_3$/L).

FINAL EFFLUENT LIMITATIONS

In accordance with WAC 173-201A-030(2), "Class A (excellent)", and WAC 173-220-130, "Effluent limitations, water quality standards, and other requirements for permits", the WWTP shall be issued final effluent based on the approved Engineering Report. The following final effluent limitations shall apply for the remainder of the permit term:

Parameter	**Average Monthly**	**Average Weekly**
Biochemical Oxygen Demand (5day)	30.0 mg/L, 50.0 lbs/day 85 % Removal	40.0 mg/L, 66.7 lbs/day
Total Suspended Solids	30 mg/L, 50.0 lbs/day 85 % Removal	40 mg/L, 66.7 lbs/day
Fecal Coliform Bacteria	200/100 mL	400/100 mL
pH	Daily minimum is equal to or greater than 6 and the daily maximum is less than or equal to 9	
Parameter	**Average Monthly**	**Maximum Daily**
Total Ammonia (as N)	6.2 mg/L, 10.4 lbs/day	14.1 mg/L, 23.6 lbs/day

Toxicity caused by unidentified pollutants is not expected in the effluent from this discharge as determined by the screening criteria given in Chapter 173-205 WAC. Therefore, no whole effluent toxicity testing is required in this permit. The Department may require effluent toxicity testing in the future if it receives information that toxicity may be present in this effluent.

HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the applicant's discharge is unlikely to contain chemicals regulated for human health.

SEDIMENT QUALITY

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the Sediment Management Standards.

COMPARISON OF EFFLUENT LIMITS WITH THE EXISTING PERMIT ISSUED APRIL 28, 1986

Parameter	**Existing Limits**	**Proposed Limits**
Flow	0.080 MGD	0.200 MGD
BOD5, monthly average	30.0 mg/L, 20.0 lbs/day	30.0 mg/L, 50.0 lbs/day
BOD5, weekly average	45.0 mg/L, 30.0 lbs/day	40.0 mg/L, 66.7 lbs/day
BOD5, percent removal	85%	85%
TSS, monthly average	30.0 mg/L, 20.0 lbs/day	30.0 mg/L, 50.0 lbs/day
TSS, weekly average	45.0 mg/L, 30.0 lbs/day	40.0 mg/L, 66.7 lbs/day
TSS, percent removal	85%	85%
pH	6.0 to 9.0	6.5 to 9.0
Fecal Coliform, monthly mean	200/100 mL	200/100 mL
Fecal Coliform, weekly mean	400/100 mL	400/100 mL
Chlorine Residual, monthly average	n/a	12.3 µg/L
Chlorine Residual, maximum day	n/a	32.3 µg/L
Ammonia (N), monthly average	n/a	7.0 mg/L, 11.7 lbs/day
Ammonia (N), maximum day	n/a	14.1 mg/L, 23.6 lbs/day

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

Monitoring for ammonia is being required to further characterize the effluent. This pollutant could have a significant impact on the quality of the surface water.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Sludge monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of the Department's *Permit Writer's Manual* (July 1994) for an activated sludge plant < 2.0 MGD (Table XIII-1C).

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories.* The laboratory at this facility is accredited for (list parameters): Biochemical Oxygen Demand (5-day), Total Suspended Solids, Chlorine Residual, Dissolved Oxygen, pH, and Fecal Coliform. Before ammonia data from the lab may be used to satisfy permit requirements, the laboratory for the facility will have to be certified for the new effluent monitoring requirement for ammonia (as N).

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 273-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 requires the Permittee to take the actions detailed in proposed permit requirement S.4. to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S.4. restricts the amount of flow.

OPERATION AND MAINTENANCE (O&M)

The proposed permit contains condition S.5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems the Permittee is required in permit condition S7. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and state Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503. The disposal of other solid waste is under the jurisdiction of the Lewis County Health Department. The Permittee shall submit a Residual Solids Management Plan to the Department for approval no later than 90 days prior to completion of construction of the new wastewater treatment facility.

OUTFALL EVALUATION

Proposed permit condition S8 requires the Permittee to conduct an outfall inspection and submit a report detailing the findings of that inspection. The purpose of the inspection is to determine the condition of the discharge pipe and diffusers and to determine if sediment is accumulating in the vicinity of the outfall.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G6 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Conditions G7 relates to permit renewal. Condition G8 prohibits the reintroduction of removed substances back into the effluent. Condition G9 states that the Department will modify or revoke and reissue the permit to conform to more stringent toxic effluent standards or prohibitions. Condition G10 incorporates by reference all other requirements of 40 CFR 122.41 and 122.42. Condition G11 notifies the Permittee that additional monitoring requirements may be established by the Department. Condition G12 requires the payment of permit fees. Condition G13 describes the penalties for violating permit conditions.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the state of Washington. The Department proposes that this permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Metcalf and Eddy.

1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Water Pollution Control Federation.

1976. Chlorination of Wastewater.

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on August 29, 1998, and September 5, 1998, in The Daily Chronicle to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) in The Daily Chronicle to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 407-6279, or by writing to the address listed above.

This permit and fact sheet were written by Jerry Anderson.

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of prevention, control, and treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

Average Weekly Discharge Limitation -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent state or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including state regulations contained in any state sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington state permit writers are joint NPDES/State permits issued under both state and federal laws.

Pass through -- A discharge which exits the POTW into waters of the–state in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of state water quality standards.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;

b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)--

1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;

2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

   Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

   *The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at http.www:wa.gov.ecology.

Streeter-Phelps analysis of critical dissolved oxygen sag.

INPUT

1. EFFLUENT CHARACTERISTICS

Discharge (cfs):	0.309
CBOD5 (mg/L):	25
NBOD (mg/L):	21
Dissolved Oxygen (mg/L):	6.2
Temperature (deg C):	19.1

2. RECEIVING WATER CHARACTERISTICS

Upstream Discharge (cfs):	20.6
Upstream CBOD5 (mg/L):	1.8
Upstream NBOD (mg/L):	0.5
Upstream Dissolved Oxygen (mg/L):	8.5
Upstream Temperature (deg C):	19.1
Elevation (ft NGVD):	456
Downstream Average Channel Slope (ft/ft):	0.0047
Downstream Average Channel Depth (ft):	1
Downstream Average Channel Velocity (fps):	1.03

3. REAERATION RATE (Base e) AT 20 deg C (day^-1): 19.37

Reference	Applic. Vel (fps)	Applic. Dep (ft)	Suggested Values
Churchill	1.5 - 6	2 - 50	11.94
O'Connor and Dobbins	.1 - 1.5	2 - 50	13.15
Owens	.1 - 6	1 - 2	22.03
Tsivoglou-Wallace	.1 - 6	.1 - 2	20.06

4. BOD DECAY RATE (Base e) AT 20 deg C (day^-1): 3.33

Reference	Suggested Value
Wright and McDonnell, 1979	2.32

OUTPUT

1. INITIAL MIXED RIVER CONDITION

CBOD5 (mg/L):	2.1
NBOD (mg/L):	0.8
Dissolved Oxygen (mg/L):	8.5
Temperature (deg C):	19.1

2. TEMPERATURE ADJUSTED RATE CONSTANTS (Base e)	
Reaeration (day^-1):	18.96
BOD Decay (day^-1):	3.20
3. CALCULATED INITIAL ULTIMATE CBODU AND TOTAL BODU	
Initial Mixed CBODU (mg/L):	3.2
Initial Mixed Total BODU (CBODU + NBOD, mg/L):	4.0
4. INITIAL DISSOLVED OXYGEN DEFICIT	
Saturation Dissolved Oxygen (mg/L):	9.108
Initial Deficit (mg/L):	0.64
5. TRAVEL TIME TO CRITICAL DO CONCENTRATION (days):	0.01
6. DISTANCE TO CRITICAL DO CONCENTRATION (miles):	0.18
7. CRITICAL DO DEFICIT (mg/L):	0.64
8. CRITICAL DO CONCENTRATION (mg/L):	8.46

Calculation of pH of a mixture of two flows. Based on the procedure in EPA's DESCON program (EPA, 1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington D.C.)	
INPUT	
1. DILUTION FACTOR AT MIXING ZONE BOUNDARY	23.400
1. UPSTREAM/BACKGROUND CHARACTERISTICS	
Temperature (deg C):	19.10
pH:	7.70
Alkalinity (mg CaCO3/L):	35.40
2. EFFLUENT CHARACTERISTICS	
Temperature (deg C):	20.00
pH:	7.50
Alkalinity (mg CaCO3/L):	100.00
OUTPUT	
1. IONIZATION CONSTANTS	
Upstream/Background pKa:	6.39
Effluent pKa:	6.38
2. IONIZATION FRACTIONS	
Upstream/Background Ionization Fraction:	0.95
Effluent Ionization Fraction:	0.93
3. TOTAL INORGANIC CARBON	

Upstream/Background Total Inorganic Carbon (mg CaCO3/L):	37.13
Effluent Total Inorganic Carbon (mg CaCO3/L):	107.62
4. CONDITIONS AT MIXING ZONE BOUNDARY	
Temperature (deg C):	19.14
Alkalinity (mg CaCO3/L):	38.16
Total Inorganic Carbon (mg CaCO3/L):	40.14
pKa:	6.39
pH at Mixing Zone Boundary:	7.67

Calculation of un-ionized ammonia concentration and criteria.	
INPUT	
1. Temperature (deg C; 0<T<30):	21.2
2. pH (6.5<pH<9.0):	7.70
3. Total Ammonia (ug N/L):	200.0
4. Acute TCAP (Salmonids present- 20; absent- 25):	20
5. Chronic TCAP (Salmonids present- 15; absent- 20):	15
OUTPUT	
1. Intermediate Calculations:	
Acute FT:	1.0000
Chronic FT:	1.4125
FPH:	1.2009
RATIO:	13.5000
pKa:	9.3630
Fraction Of Total Ammonia Present As Un-ionized:	2.1265%
2. Sample Un-ionized Ammonia Concentration (ug/L as NH3-N):	4.3
3. Un-ionized Ammonia Criteria:	
Acute (1-hour) Un-ionized Ammonia Criterion (ug/L as NH3-N):	178.0
Chronic (4-day) Un-ionized Ammonia Criterion (ug/L as NH3-N):	28.7
4. Total Ammonia Criteria:	
Acute Total Ammonia Criterion (ug/L as NH3-N):	8,369
Chronic Total Ammonia Criterion (ug/L as NH3-N):	1,350

Water Quality-Based Permit Limits for acute and chronic criteria.	
1. Water Quality Standards (Concentration)	
Acute (one-hour) Criteria:	8.369
Chronic (n-day) Criteria:	1.350
2. Upstream Receiving Water Concentration	
Upstream Concentration for Acute Condition (7Q10):	0.090
Upstream Concentration for Chronic Condition (7Q10):	0.090
3. Dilution Factors (1/{Effluent Volume Fraction})	
Acute Receiving Water Dilution Factor at 7Q10:	1.700
Chronic Receiving Water Dilution Factor at 7Q10:	23.400
4. Coefficient of Variation for Effluent Concentration	
(use 0.6 if data are not available):	0.600
5. Number of days (n1) for chronic average	
(usually four or seven; four is recommended):	4
6. Number of samples (n2) required per month for monitoring:	8
OUTPUT	
1. Z Statistics	
LTA Derivation (99%tile):	2.326
Daily Maximum Permit Limit (99%tile):	2.326
Monthly Average Permit Limit (95%tile):	1.645
2. Calculated Waste Load Allocations (WLA's)	
Acute (one-hour) WLA:	14.164
Chronic (n1-day) WLA:	29.574
3. Derivation of LTAs using April 1990 TSD (Box 5-2 Step 2 & 3)	
Sigma^2:	0.3075
Sigma^2-n1:	0.0862
LTA for Acute (1-hour) WLA:	4.548
LTA for Chronic (n1-day) WLA:	15.598
Most Limiting LTA (minimum of acute and chronic):	4.548
4. Derivation of Permit Limits From Limiting LTA (Box 5-2 Step 4)	
Sigma^2-n2:	0.0440

Daily Maximum Permit Limit:	14.164
Monthly Average Permit Limit:	6.283

APPENDIX D--MAPS AND DRAWINGS

APPENDIX E – WWTP INSPECTION REPORTS

The following is a summary of the non-compliance problems at the treatment plant and the follow-up actions taken by the Department to bring the facility back into compliance:

The Onalaska treatment facility has experienced serious compliance difficulties during the past permit cycle. An announced Class I compliance inspection was conducted September 12, 1996, due to the increasing number of effluent limitation violations. Since November 1995, the Onalaska WWTP had exceeded permitted effluent limitations for biochemical oxygen demand, total suspended solids, pH, and flow. In addition, discharge monitoring results were late or unsubmitted. A Notice of Correction was issued on May 30, 1996, to address these problems and for a time no permit violations were reported or noted.

On June 5, 1997, an unannounced Class 2 compliance inspection was conducted due to a smell complaint received from an anonymous caller. The caller, who lives next door to the treatment plant, indicated that the "raceway" at the plant had been down for about three and one-half weeks and the odor had been bad. Ken Atkison, Onalaska's Class II Operator, accompanied the inspectors.

The inspectors found the oxidation ditch rotor was not on. When asked about the rotor, Ken was evasive and said that they had had some operational and maintenance problems with it and that it had been off for a couple of weeks. Overall, the plant smelled strongly of hydrogen sulfide was unkempt and not operating. Several 35mm pictures were taken. The operator had not notified Department personnel of the breakdowns in equipment.

The influent bar screen had not been cleaned in so long that flow was coming over the top as well as backing into the collection system and depositing solids. Solids had settled so long as to create gas rising to the surface indicating septicity. A pipe where the flow went had a port for influent sampling which was partially blocked by a long piece of used PVC pipe. The composite sampler was disassembled. The sampler was not functional, but Ken indicated 24-hour composite samples had been collected. This sampler was for both influent sampling and effluent sampling. When asked how long ago had this occurred, Ken was evasive. When asked if he was sampling, Ken said he had not been testing for a week or so.

Ken indicted that a hypochlorinator was being used for disinfection, but the pump for it was not on and sodium hypochlorite did not appear to be reaching the chlorine contact chamber.

The lab was in disarray. They had moved the power back-up generator outside on a concrete pad but it had no provision to power the facility. There were indications that testing had been halted. When asked about the completed bench sheets, Ken could not produce any and explained that they were at his home. When asked about benchsheets for the prior month, he could not produce any.

Two samples of effluent were collected in 300ml BOD bottles to test for dissolved oxygen (DO), biochemical oxygen demand, (BOD), chemical oxygen demand (COD), pH, and total suspended solids (TSS). When the first two Winkler reagents were introduced a white precipitant developed. This indicates that no or very low oxygen (<0.5mg/L) was present. Although not a permit limit, this would typically be 6 mg/L or higher. A lack of oxygen in the effluent can have effects on the receiving stream. Ecology's Environmental Investigations & Lab Services found the DO concentration in the two samples we collected to be less than 1 mg/L. The other samples were dropped off to be analyzed for BOD, COD, TSS, and pH at the Olympia LOTT certified lab. The test results show high concentrations of BOD and TSS, well above permitted limitations for these parameters.

Solids were designed to be removed from the process by discharging to the drying beds. However, two of the three drying beds were inoperable. One bed had spare parts stored and the other had an auto in it and a wooden framework. Closer inspection revealed a wall surrounding a large hammock. When asked Ken replied it was for call outs at night when he did not want to drive back home.

This facility has been operated and maintained poorly, the tests are suspect, and the effluent we saw and collected does not meet limits in the permit

The plant's final effluent flows into an out fall line that discharges to the Newaukum River. Consequently, on June 5, the Department reported the discharge to Lewis County Department of Health.

An announced, follow-up compliance inspection was made the next day. During this inspection, Commissioners Stan Blair and Charles L. Wrzesinski and Travis Meade, the plant operator's assistant, were present. The plant operator, Ken Atkison, told the commissioners he could not be present due to a previously scheduled doctor's appointment.

There was a strong septic smell present at the plant. Pictures and effluent samples were taken. The rotor was running in the oxidation ditch, but the surface was covered with thick, scummy foam. It smelled like raw sewage and rotten eggs. The wiring to the rotor was strung over the grass to the power source. It had been cut and taped a few feet from the rotor. The secondary clarifier looked worse than it had the day before. There was a thick blanket of brownish, gray sludge on the surface. Flow was going through it, whereas the day before no flow had been present. Solids in the outside baffle were black and had evidently been there for some time. It smelled septic.

The chlorine contact chamber had floating solids and maggots on the surface. Rising gas indicated septic solids on the bottom. The discharge was a grayish milky color and had a strong smell. A hypochlorinator was hooked up and it looked like sodium hypochlorite was being fed into the chlorine contact chamber.

The lab had been cleaned, but no sampling was occurring. They had not sampled on June 5 either, and Ken had told Kathleen during that inspection that samples had not been taken for about a week. There was no water in the fecal coliform bath. Ms. Emmett requested to see the May discharge monitoring report and bench sheets on both June 5 and June 6 inspections. They were not available either time. On the June 5 inspection, Ken told Ms. Emmett the discharge monitoring report and the bench sheets were at his home in Rochester. He was told to fax the reports to the Department. The reports were not faxed and not present on the June 6 inspection.

This facility has been operated and maintained poorly, the tests are suspect, the effluent we saw and collected will not meet limits in the permit, and the water downstream from the discharge is being contaminated. We discussed the condition of the plant with the commissioners and told them an Ecology enforcement action would be forthcoming.

We dropped off two samples to be tested for fecal coliform bacteria at the LOTT facility. The samples were analyzed on June 7, 1997, and the results were as follows: Sample A: >200,000 colonies/100mL, Sample B: >200,000 colonies/100mL.

An unannounced Class 2 compliance inspection was conducted as a follow-up to two inspections from the previous week. Kathleen Emmett, Ecology Compliance Officer, conducted the inspection and was accompanied by Norman Mollerup, Ecology Criminal Investigations Unit, and Sandra Smith, Environmental Protection Agency (EPA) Criminal Investigator. Ken Atkison, Onalaska's Class II Operator, accompanied us on the inspection. Norman and Sandra discussed the situation at the plant with Ken.

The influent bar screen had still not been cleaned, this should be done daily. The bar screen was entirely covered with debris. A hose connected to a fresh water faucet next to the influent bar screen was strung across the grass, turned on full force and spraying into the chlorine contact chamber. The hose should not be running in the chlorine contact chamber at all. Adding fresh water to the chlorine contact chamber dilutes the treated effluent, and when monitoring is occurring, all monitoring must be representative of the monitored activity (Permit Conditions S3.d., G12 and 40 CFR 122.41(j)(1)). Having the hose spray into the contact chamber also stirs up solids that would normally settle out, causing them to wash out. The sludge, maggots, and floatables that were seen during the inspections on June 5 and 6 were no longer there. Since there is no record of solids being wasted, they were evidently washed out. General Condition G5 expressly forbids intentional by-pass of wastes from all or any portion of the treatment works.

The composite sampler for both influent sampling and effluent sampling was still disassembled, but the hypochlorinator pump was on and appeared to be pumping chlorine into the chlorine contact chamber.

The rotor was running and the rotten egg odor was not as strong as it was on the June 5 and 6 inspections. When an oxidation ditch is operating normally, there will be little odor. The rotten egg smell usually indicates poor housekeeping, and grease and solids buildup on the sides of the ditch and the rotor were apparent. The oxidation ditch still had a high concentration of suspended solids, which resulted in a heavy brown scum developing when the rotor was off and a dark brown layer of bubbles and scum when the rotor was running. Since the oxidation ditch is operated as a closed system, the amount of volatile suspended solids will increase, making it necessary to periodically remove sludge from the process. Ken indicated that he could not remember the last time sludge had been wasted. If solids are not properly removed from the treatment process they will eventually wash out. The power line to the rotor had been spliced and taped together and was strung across the grass to the control panel. I had pointed out that this wiring was not to code to Commissioners Chuck Wrzesinski and Stan Blair on the June 6 inspection.

The secondary clarifier was discharging a grayish milky effluent. Scum and solids were floating on the surface, indicating poor maintenance.

During the inspection, I took pictures and collected five samples from the final effluent and two from the receiving stream (Newaukum River). The samples I collected were iced and sent to Manchester Environmental Laboratory for evaluation and analysis.

This facility has been operated and maintained poorly, the tests are suspect, the effluent we saw and collected did not meet limits in the permit. The test results of the samples I took are attached.

An announced Class 2 compliance inspection was conducted as a follow-up to four previous inspections. Kathleen Emmett, Ecology Compliance Officer, conducted the inspection and was accompanied by Carl Jones, Ecology Operator Outreach Specialist, Ellen Dodds, Lewis County Department of Health, and Mike Venatieri, Lewis County Department of Health. Ken Atkison, Onalaska's Operator, accompanied us on the inspection.

The influent bar screen had still not been cleaned. The bar screen was entirely covered with debris. The wastewater in the oxidation ditch was still quite dark and frothy, indicating a high concentration of solids and the need to waste sludge. Carl Jones measured sludge depth in the chlorine contact chamber with a sludge judge; depth was about two feet. Carl also grabbed samples from the final effluent to be analyzed at the LOTT Water Quality Laboratory for fecal coliform bacteria. The results of the analysis showed a fecal coliform count in excess of permit limits; the results are attached.

At 11:17 a.m., Wildwood Sludge Handling Company arrived with a 6000-gallon capacity tanker truck. Wildwood had taken sludge from Onalaska to Biosolids Recycling in Centralia before but they were not taking it to biosolids facility this time because of a requirement that the sludge be tested. Kathleen informed Ken that the plant needed to be pumped out anyway and suggested that a wastewater treatment plant could probably take the sludge. Mike Venatieri called the Centralia WWTP and asked them if they were able to take the sludge and they agreed to take it.

While the pumping was going on, Carl Jones, Mike Venatieri, Ellen Dodds, and Kathie Emmett went down to the outfall location in the Newaukum River. Ellen posted a health advisory on the beach adjacent to the outfall and Kathleen grabbed samples for Ellen upstream and downstream of the outfall in the river. Sample results show elevated counts of fecal coliform bacteria downstream of the outfall. The results are attached. Kathleen and Carl took pictures.

As a follow-up to these inspections, the health department issued an Environmental Health Advisory for Onalaska in June 1997. The Advisory is a warning to the people to not have contact with the North Fork of the Newaukum River between Onalaska and Chehalis. This advisory was due to the discharge of high levels of fecal coliform from the treatment plant. The Health Advisory was lifted in August 1997. In October 1997, the Department issued a penalty to the District for these permit violations.

Prior to October 1997, the Operator, Mr. Ken Atkinson, under threat of legal action quit his job. Ken's WWTP Operator's Certification was rescinded. Ken's assistant, Mr. Travis Meade, was hired as the operator. Travis has made a difference at this facility and has maintained and operated the facility satisfactorily. The facility and the collection system still needs major replacements to continue to provide secondary treatment.

Since October 1997, the violations have been mainly due to excessive flows to the plant. Effluent violations are mostly due to high concentrations of total suspended solids in the influent, which indicates excessive inflow and infiltration into the collection system. The District was issued a warning letter in March 1998 due to these violations.

APPENDIX F--RESPONSE TO COMMENTS